

This Old House

Renovation IN SAVANNAH



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PLUS:

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Gutters
Cordless Drills
Workbenches
Plasterwork



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Norm Abram with Mills and
Marlanne Fleming inside their new
house, site of this season's TV show.

Walk around to the driver's side of the Plymouth Grand Voyager and you'll find an industry exclusive: an available second sliding door. Now, getting in and out of our



minivan is easier than ever. (So is loading and unloading cargo.) And just wait 'till you see what's behind door number two. • Rear bench seats that

adjust to accommodate... anything from a full-suction baby bottle to a full one-liter jug—another...well, you get the picture. Simply put, the new Grand Voyager is the next generation of the minivan. • All of which says nothing of Grand Voyager's long list of safety features, like dual air bags, four-wheel anti-lock brakes* and available dual integrated child safety seats. The all-new Plymouth Grand Voyager. Maybe the



**Where do you find
the newest thing
in a minivan?**

**Second door
on the right.**



Plymouth Grand Voyager

glide on wheels, making them a cinch to move and roll away. We call them Easy Out Roller Seats,* and they're another industry exclusive. And depending on which seating package you choose, both bench seats now fold flat,* allowing you to carry a



4' x 8' sheet of plywood with the seats in and the liftgate closed. • Front cup holders

question really isn't what's new—but what isn't? • For more information, see your local Chrysler and Plymouth dealer, or call 1-800-PLYMOUTH, or visit Plymouth Place™ on the Internet's World Wide Web at <http://www.plymouthcars.com>.



One clever idea after another. That's Plymouth.





The first time he got behind the wheel of a race car, he won. And Mario Andretti never stopped. He won the Daytona 500 in 1967. The Indianapolis 500 in 1970. The Formula One World Championship in 1978. And in 28 years since, he has driven nearly

every race car there is, broken and won nearly every title there is to win. So when he began looking elsewhere for the one place he was looking at Kinsale, Pennsylvania, several factors were at play. He went with the company that is just as reliable,

just as driven to perfection as he is. Mario Andretti chose Marvin. If you want the windows and doors in your house to reflect your unique sense of style and taste, call 1-800-348-2228 (1-800-348-6843 in Canada) or send the coupon for a free brochure.

Daughter married to: Mario Andretti b. Married:

Spouse:

City: State:

Prov. (Prov. Name):

Telephone:

MARVIN

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Get monthly updates on the Savannah project as well as updated appearance schedules for the crew

The Old House can be reached through Portholder on the Web at www.oldhouseportholder.com/120

Cover photograph by Thibault Janssen



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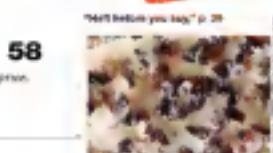
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Photo © Christopher P. Smith

Overextension can be dangerous. Think about your safety, and that of others, when you embark on the projects shown in this magazine.

PHOTOGRAPH BY JEFFREY L. BROWN

The new

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For a free Saab Reservation Kit, which provides information on the new Saab line, call 1-800-313-SAAB, Ext. 112. www.saabusa.com



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issue of *This Old House*

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Plywood

Brick pathways

Chambers

Termite metal rods

Clamps

Identifying pests

Rescreening

Building a fishpond

Work boots

Paint recipes

Hoof trimming systems

American fences

Introducing
a new feature
on master craftsmen:
the staircase maker

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available for download.

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Letters

FROM OUR READERS

How should we find a good contractor?

Mark and Lori Pfeiferhouse
via e-mail

"Ask around," says Tom Dene, who puts 600 of those in word-of-mouth recommendations. "Talk to friends and neighbors, ask at the local lumberyard—get a home center or go to the local building inspector. He may not tell you a particular contractor is bad, but it's his while to point you toward the good guys. Once you've found somebody make sure he or she is licensed and insured, then get three references—ideally from current jobs—and follow through on all of them. Stay away from low bidders. Tom says, "They're lessening something out."

I was very disturbed by the comment the Davies official made.

After Mrs. Davies—she actually used the word "disabled"—told me I made my blood boil, please let Deborah know that I am behind her.

Gatherine Foy
via e-mail

For you and the many viewers who wrote in in support of Deborah Davies after Deborah Davies at Large: When Davies made a reference to the family "wedding into" town, and not assured that the speaker was not referring to the recent election. While he never apologized, local papers reported

that Davies had a sink and the original bathroom's clawfoot tub.

Paul or Barbara? Design or idea can be used on a wooden nest to prevent mold formation?

Don John Geroni Jr.
Larchmont, New York

Paul: Did you ever notice a nest with moss or moss everywhere but near the chimney where there is metal flashing? Flashing is made from copper or zinc in a good way to fit in well because you can reuse these metals in the ridge cap of a new roof, or nail metal shingles under existing shingles with part of each step exposed.

In the Sierra Nevada, you installed an automatic shutoff valve for a washing machine. When can I get it?

Donald Smith
Kensington, Maryland

It's not a valve to reduce the chance of leaks by shutting off the water supply when the water is off, as made by Wirsbo.

Proprietary Company
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North Andover, MA
978-687-6880/8811

Valve is a device that automatically turns off or turns on a water system.

• The photographs of insulation glue and heat recovery film were switched on page 54 of "Windows 101" (see editorial, left). On 1/18/08 in "This Old House," we'll be sending tips longer and faster. On page 23 of the two-page "Windows 101" feature, the first sentence is as follows: "The best insulation is 100 percent by insulation." (The correct sentence is 100 percent by insulation.)

• Check out the "Windows 101" Q&A column on page 23. John Dene's answer on how to insulate a metal roof is based on a typical winter weather pattern: "The snow pressure on a metal roof is way out, putting a pressure far more on

the roof than the snow is on the roof.

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How To Make Your Castle More Comfortable.



Block or shades. Suntower SC-75 windows can also help regain heat in the winter as well.

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show you all the things to look for in a window.

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When You're Serious
About Windows



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television listings

where and when to see this off-the-air

LSI: 1000
WEA-TV
Sun 7:30 pm
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Thurs 8:30 pm
WBAA-TV
Sun 11:30 pm

EVANSTON
WEV-TV
Sun 11:30 pm
Wed 11:00 pm
Sat 11:00 pm

Omaha
KSN-TV
(Central Bluff)

Fox Weather
WEW-TV
Sun 10:30 pm

Kansas City
KOTV-TV
Sun 10:30 pm

Memphis
WEW-TV
Sun 10:30 pm

Montgomery
WEW-TV
Wed 9:00 pm

WEW-TV
Sun 10:30 pm

Two Dodge
KETV-TV
Sun 4:30 pm
Sat 5:30 pm

Omaha City
KSN-TV
Sun 8:30 pm
Sat 9:30 pm

Bethel Park
KETV-TV
Sun 4:30 pm
Sat 5:30 pm

Evansville
WEW-TV
Sun 10:30 pm
Wed 11:00 pm

WDBJ-TV
Sun 10:30 pm

KETV-TV
Sun 4:30 pm
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Popular Science called it a "home stereo," and gave it a perfect grade "Best Of Wave Radio" award. The key is



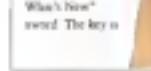
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If you have house-related news, write:
This Old House
20 West 86th Street
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extras

a better wrench

In his shop and on house calls, plumber Richard Thrasher has been evaluating wrenches. "I always looking for the perfect tool," he says. One of the four shown here caught his surprise—literally. The Robo-Grip "seemed kind of gummy-blue at first, but it's easy to use. It isn't difficult to open or squeeze the handles, which is great, and the handles are well-shaped." Of riveted, integrated construction, the 10-inch long and the 12-inch jaws both parallel on planes and arcs. Its estimate is 8-inch and 10-inch models, with compact or straight jaws. Thrasher's sole complaint: "The spring-loaded handles tend to stay open in the toolbox, so it's a little clumsy to get out." Still, he's surprised at how much he uses it and likes it. He was less enthusiastic about two Kaliex imports. Model KHN400 (\$12) works well, "but it's heavy and expensive. It doesn't self-adjust, and the handles seem designed to pinch your palms when closed." The smooth, parallel jaws are good on nuts but not on pipes. "The lighter model KHN111-10 (\$10) is great," he says. "The handles are springy and comfortable, and the jaws give you two jaws, one for pipe and another for nuts." As for Sunex's EZ-Grip, an 8-inch adjustable wrench with a handy thumb-wheel mechanism, Richard says "this isn't heavy-duty enough for hard use, but it's a good all-around tool for quick fixes. It's perfect to keep in the trunk of the car, just as you're covered."

BUDGING BUILDERS



(See Building, page 118, for details and sources)



PHOTO COURTESY OF KALIEX

"Criticism comes easier than craftsmanship."

By Tom

Photographs by Darrin Hardad



events of interest

■ FOR AUGH INSECT: THE CRAZIEST HERBS OF OLD, Saturday, plan to attend the 6th Annual Tour of Homes and Gardens, March 25-26. Festivities include walking tours, a putz train and Stanley Steemer's House, a local must-visit. For information, call 813-254-6824.

■ RESTAURANT: THE largest presentation conference in North America, will be held March 17-19 at the Bellmore Convention Center. The show features 300 exhibitors of products and services and 35 educational conferences on the theme: "Moving into the Marketplace: Making Restaurant Accessible to All." Call 508-684-8060 to register.

■ SPEND THE NIGHT IN AN HOTEL: you book yourself at the University of Calgary's weekend course in Igloo and Ensuite Shower construction. The course starts with a lecture on March 18, followed by a hands-on building session March 19-21. Call 403-229-5028 for registration information.

■ THE GRIND ESTATE IN CHARLOTTESVILLE, VIRGINIA, will be holding a three-day symposium on "The Grind Estate: Yesterday, Today and Tomorrow." Alfred Gulledge and tour the 8,000-acre private estate's gardens, orchards and art collections. April 11-13. For information call 804-982-5812.

CFC black market

Enterprising smugglers are turning from guns and drugs to chlorofluorocarbons, or CFCs. The ozone-depleting refrigerant gas, used in some residential and automotive air conditioners, hit the black market several years ago but became a hot item this year when production and new imports were banned in the United States. Smugglers buy the coolant overseas and sneak it into the country mixed with legal cargo or in fraudulently labeled cylinders. It's then sold to heating and cooling contractors, auto repair shops and industrial users. Street value: about \$20,000 per ton. According to federal officials, more than 1 million tons of contraband CFC have been confiscated and dozens of people arrested within the last year.

(See Directory, page 118, for details and sources)

*Because of Dodge Intrepid's
reclining-forward design, you won't find
the headrest tilted in the
usual place. Its
leading edge is
reclining forward
and down, to
enhance visibility*



classical mechanics

The wheels are packed toward the corners, for greater stability and increased interior room.

And this year many features that were options are standard. So now the price of a well-equipped Intrepid may be lower than you'd expect... while resale value is higher than Taurus, Lancer, Contour and every car in its class!

Except for the windshield,
the wheels and the price,
things are pretty much where
you'd expect them to be.



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extra

Just the thing for that back-porch like, too. The Top is a membrane roof that's thin as paper, so it's impervious to just about everything, including heat, bugs, fire, moisture, and even sunlight. It's perfect to replace a roof that's too old to repair, or to add a room to a house with a flat roof. The 30-in.-by-44-in. panels are rolled in place much like ordinary shingles, although laying shingles and caring for a roof-leaking takes skills. The long, sliding track lets it click out of old shingles. You like how it cuts the teeth at the edges, keeping them around a shingle or pipe to keep the roof from leaking like it's been ever stumped. "Top" costs \$12 per square foot, underlined. It comes with a design tool that can be printed. We respect that.

what will they think of next?

Tropic Top
wall of noise

Good Fences

Building a fence this spring? For inspiration, look through *Fences* by Peter Joel Hansen. About 15 years ago, Hansen wanted a Colonial-style fence to go with his Colonial-style house in Raleigh, North Carolina. Finding no suitable design guide, he set out to write his own. The result is a page after gorgous page of photos, details, plans and whole sections of fencing, all drawn to scale from examples he saw during visits to historic sites in the East. Hansen has done similar books on gardens and brick patios. He's currently at work on a collection of Cape Cod fence designs.



Wood USE

Despite all our talk about saving the forests, Americans are using more wood and wood products in homes than at any time since record-breaking figures in 1980. The average new house of 1992 used more than twice as much lumber and related products as did the average new house of yesterday. Mostly this is because the average house these days is much larger. But 30-in. wood volume for each square foot of finished floor space is also an all-time high. Forrest Service researchers say the increase of more than 100 cubic feet per square foot is due to the use of ornate spaces instead of concrete slabs.

Quick Change Screwdriver Bits

The Snappy Quick Chuck deserves its name. Chuck it into your hand drill and you can install or change bits in seconds. Just push in a screwdriver, drill or countersink bit, and it locks in place; to remove it, just slide back the locking collar. Problem: ground hex-end tools are required. No problem. Snappy has adapters to mount bits from $1/8$ to $1/2$ -inch. Vermont American's "Screw Boss" is a handy tool to use with or without the Snappy. Its magnetic holder accepts hex-shank screwdriving bits, and its sliding sleeve holds screws up to No. 10 diameter. It's a neatly identified accessory with a clear plastic sleeve so you can see where the screw is driven home.



(See Screening, page 170, for details and sources.)

"We shape our buildings; thereafter, they shape us."

Winston Churchill



This Old House

Homemade Dreams

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This Old House

You think your contractor is slow? This house took 200 million years to build—and it takes 10 years for \$5 million. The Basement Castle, built in the Clark Mountains in northwestern Arkansas, was turned into a tenth-century fortress by John Hay in 1984. Once Hay's fleet of tanks surrendered, his transhumance into a

Cave Abode

"Society's finest!" Fully loaded, the passageway is 1,500 square feet of living space with two bedrooms, the castle, a gourmet kitchen and tons of unique antiques. (For more details,



are bearproof and can house 100 visitors and an underground swimming pool.)

The castle sits atop 500 acres complete with waterfalls, a fishing pond, a horse barn and a leather-paneled 100-room manor through a passageway at the back of the house. Hay's wife, Carol, sometimes requires its length as "swimming through Alice's looking glass."

For those who'd like to get a castle look without getting the hefty investment, visit the site below—although they don't come cheap either. Admissions start at \$475 in season (they'veough October) and \$275 during the off season. Call 800-888-2983 for more details.

Jamb adjusters



Guillozo claims had "been done," so Swiss master carpenter Werner Fluckiger whizzed away the Alpine winters by inventing the Top Star jamb adjuster. It's a two-part screw: one part rotating inside the other, that eliminates tedious shimming. To set door and window jambs, simply predrill, then drive the Top Star until the primary threads grip the frame and the secondary threads lock into the jamb. Blocking out the primary screw pushes the jamb into perfect (and unshimmed) alignment. A two-part bit makes this a breeze.



Can tool-wielding guy types have delicate hands? Plasterer Jim Marshall (featured in our September/October 1985 issue) does despite his grubby work. He uses an

almond scented lotion (not coffee oil that isn't greasy). "That way I can still control my tools," he says. This sort of after juice and lotion it was developed for the rough necks of Texas oil fields—hence its name Oil Driller's Lotion.

TOUGH SMOOTH HANDS GUY'S

XMAS in APRIL

For the past several years, the West Security in Appling (near Columbus) for thousands of needy homeowners. Christmas in April, a volunteer-supported home rehabilitation program, uses the loan-making approach to improve the residences of low-income, elderly and disabled people nationwide. Throughout the year, the program recruits volunteers, collects donations and identifies homeowners. With

can be enforced or submit applications. Then, on the designated day, dozens of volunteers descend to patch roofs, paint walls, fix cracks, repair plumbing and wiring, build wheelchair ramps and much other improvements.

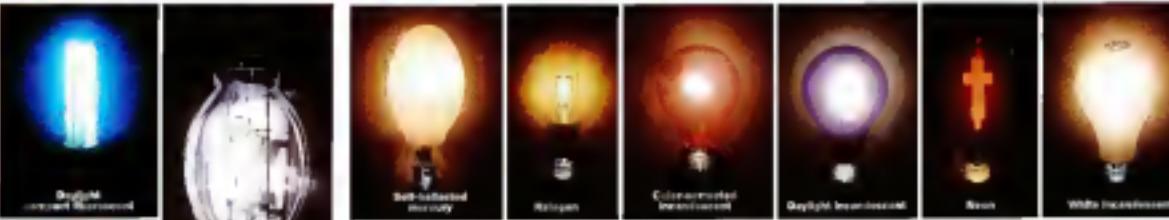
"It's an innovative idea that works," says Christmas in April president Rick Jackson. "We never hear anything."

Jackson says the recent part of its getting the homeowner to believe it's for real use for free. The program went national seven years ago, and is projected that this spring 4,000 houses will be rehabilitated by 120,000 volunteers in 400 cities and towns. Call 800-473-4229 for more information.

ENVIRONMENTALLY CONFUSED? If you're wondering about which plants and grasses are indigenous to your part of the country, have questions about recycling or are concerned about the use of toxic chemicals in home repair, call the folks at American Public Information on the Environment—a.k.a. American PIE. The toll-free service (800-320-2743) offers advice on a wide range of environmental issues. Open Monday to Friday 8:00 a.m. to 5:00 p.m. EST. You can also request information via e-mail at 78143.3373@compuserve.com

Shedding Light

Lightbulbs (called lamps by cranks) come in more shapes and sizes and lanterns than anyone has time to figure out. Here's some illumination: Evaluate the brightness of bulbs according to lumens, not watts—a 15-watt fluorescent and a 75-watt incandescent both put out about 900 lumens. Federal law requires labeling to contain these values. Also check the package for the color rendering index to measure of the bulb's ability to render



colors accurately (and life expectancy in hours).

Incandescents are the ones we've used to. They cast a warm glow (especially those with a frosted or tinted glass globe), fit in conventional sockets, generate heat and guzzle energy. Halogens are a more efficient type of incandescents; they generate about 30 percent more light per watt. Neons bulbs are uncommon in residential applications. That novelty neon fit in a conventional socket, most don't. Compact fluorescents produce little heat and

lot of light. They're expensive but efficient and last up to 10 times as long as incandescents. Keep power from looking ugly in the light fixture by selecting warm-temperature bulbs—those with a Kelvin rating (check the packaging) below 3,000. The self-ballasted mercury lamp is used for commercial applications of the kind of light you are placing outside the back door or in a store. Metal halide lamps are used in highway light posts. They're about 16 inches tall with the grit of a grapefruit



Photo courtesy of GE Lighting

I can't say enough about Ace Lawn & Garden Supplies...

The oscillating sprayer. Dad knows exactly what oscillating means, but it keeps the lawn watered and the kids cool.

The shovel. "Borrowed" this from Dad when we planted the azalea a couple years ago. Wonder if he noticed it's gone.



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By Lewis Mower. "Old Red." Bought this when we bought the house. Starts every time since when I wish it wouldn't.

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Cordless Drills and Drivers

A new generation for the job site

BY MARK FEIRER PHOTOGRAPH BY KELLER AND KELLER

W

hen it comes to drilling holes or driving screws, you can't beat a cordless tool for convenience. "I don't even use a corded model anymore," says Tom Silva, *This Old House* contractor. "Unless I've got a pile of drywall to hang or a whole subfloor to screw off, it's faster to grab a cordless and go."

He's not alone. "Plumbers, electricians, the guys who do the ductwork—they're all gone cordless," Tom says. Carpenters don't lug extension cords up and down ladders, heating contractors don't fillet their power cords on the edges of metal ducts, and nobody has to worry as much about the shock hazards of working where it's wet.

A drill/driver is essentially a drill with added features (including a multi-setting clutch) to handle the heavier stresses of screwdriving. That makes it more versatile than an ordinary drill. The batteries and

battery chargers of both tools, however, are a lot heavier than they used to be. Maxxat contractor Norm Alvarado's first cordless drill took about three hours to charge and wasn't much better than a Stanley screwdriver for driving screws. These days a drill/driver is ready to go in as little as 15 minutes, more than adequate to keep most people working steadily. Tom, however, prefers two batteries on the job. One stays on the charger until the other dies, and he swaps them back and forth all day to maximize downtime. As before, a heating contractor, he uses several drill/drivers with batteries that charge up to 14.4 volts. Unless you're using it professionally, though, a 9.6-volt drill or drill/driver will be able to do most any-thing around your old house.



A cordless drill/driver is just right for heating, ductwork, and electrical jobs. The switch on top is for changing speed ranges.

Most children will have a variable-speed trigger switch. These switches are for starting helms, fast switches (switches that trigger drives have these same features but with two separate triggers on a single switch), and a high-current trigger for starting engines. When you start a homebrewing rig, an adjustable switch inside the tool allows you to set various on/off switches. Most de/ON/Offs have on/offable breakers. When the trigger is activated, the switch opens the circuit to stop the engine or to switch from homebrewing to a motor. Whatever the features, a skillful child should be comfortable in using them. Now, this probably isn't a permanent choice. With a tool before you buy it, because they vary considerably in weight and cost. The basic types are shown here. Light-duty child-size gear for about \$40-\$60, medium-duty models are \$120 to \$180. Standard car-size drives are considerably less expensive.

- Beach plowed-baited driftlines
- Marine plaited-grip driftlines with removable side handles
- Wifflebaits 360-degree range (300m with test drifters)
- Wiffle-Trollmote driftlines
- Wiffle right-angle drift



The Parts

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CHUCKS



CHECK CHOICES
A **check** with a **key** (between the **P** and the **W**) indicates that the student is to **check** or **cross out** the **best** choice. **Study** the **check** choices, but **do not** let the **check** dominate. In these **comprehension** **multiple-choice** **questions**, variation is right. It is a **quick-and-easy** **check**. It **assumes** only **one** **right** **answer** and **encourages** **right** **answers**. **It is a check**.

bedded tenth eighths more chunks, red at weeks' first—if you can find it. "A check key is the first thing you lose on a job," says Tom, eyes of it clamped to the drill itself. With a hapless chuck clamped snarling so loose, a pair of limned rings around the outside of the chuck let you right on or loosen it by hand. "Keyed chuck? I won't man 'em in a job," Tom says.

BATTERIES AND CHARGERS

A battery charger generates heat, and over-heating that heat into the short cycle lifetime of quick-chargers can damage a battery. The new "smart" chargers get around this by using electronic circuitry to monitor the charging process and minimize heat buildup. Some even refuse to charge a sun-exposed battery until it has cooled

Other than keeping patients out, physicians need little power. "We represent a line," says Tom, "but that's mainly after no medicine has failed on them."

The history of any rechargeable cell is actually a collection of histories, called cells, wired together and filled into a battery pack. Each cell is rated at 1.2 milliamps, 1000 and you have a 12-volt pack. The greater the voltage, the more cells the battery can be before it has to be recharged (and the lower the total milliamp power output) from 1000 to 10,000 charging cycles. Rechargeable packs generally cost over \$100, though (battery 1981).

Smaller cells called batteries, the new models can

partially discharged and then recharge without any ill effect. You'll get more life out of it, though, if you recharge it only when the tool starts to lose magnetism. Don't wait until it stops dead—you are damage the cells if you discharge a battery too deeply.

- If laundry items #4 to #3 presented a full charge every day, a user of a small bin's wash cycle would have to wash clothes in three laundry cycles. In this model, laundry items #4 to #3 are washed in one wash cycle.

- The displays are recyclable materials in case you choose to upgrade. Battery life is about 800-900-T722.
- A few batteries include a built-in LED readout that tells you how much charge is left at any given time.



Drill/Driver Techniques

PHOTOGRAPHS BY KELLER AND KELLER

Simple things, like drilling a hole perfectly straight, can be surprisingly tricky, just as simple tools are often the ones you have to watch out for. "You might be holding a board for a quick hole and end up drilling through your hand on the other side," cautions Tom, so pay attention to where your hands are at all times.

DRILLING HOLES



STRAIGHT DRILLING
Step 1: Drill
Up straight with the
workpiece, and don't
let the bit wobble.
For greater control,
you can sometimes
bore a small square
aperture into the bit
or a guide. "Another
way in to bore
holes is to use
a power drill with
a bit you've never
seen before. The
drill will stay in
straighter."



ANGLE DRILLING
Step 1: Drill
In straight at a 90° angle
or so, then remove
and reposition
the tool to
bore the side of
the starter hole. That
gives the bit some-
thing to bite into, and
it won't wander if
you're using a square
bit; your interior hole
has to be a little
deeper.



Step 2: "When you
find your angle,
stick with it." Tom
says. Once you've
got your angle, it
won't probably ruin
the hole. "Keep it
drilled up on the heel
to prevent it from
wobbling. Push the
bit firmly into the
hole, then pull it
out while the bit is
still turning."

DRIVING SCREWS



Tom prefers pistol-grip drill/drivers because he can put his muscle directly in line with the bit. He centers the hand logo on the tool and pulls the trigger with his thumb. "It's simple. Though it's not always possible, he tries to keep his forearm aligned with the screw to maximize what strength and impression.

To drive a screw, Tom says, a few things are important. First, he tries to keep an even pressure on the screwdriver bit as he drives it. Tom says it's important to make sure the screw is fully set (you'll usually hear a "click" as it disengages the motor when the screw is fully set) and you'll know it's fully set when the screw starts driving a few turns until you get it just right. Then, drill up the bit with the screw. Tom's #10 Phillips bit gives him something to bite down, making it easier to drive. Start the screw slowly, increase speed once it's on the way and maintain firm pressure to keep the bit from slipping.

Pre-drilled screw holes actually make for a stronger connection. The screw shank won't create any friction on its entry, and the threads get a better bite. The pilot hole diameter should be slightly less than the diameter of the screw shank.



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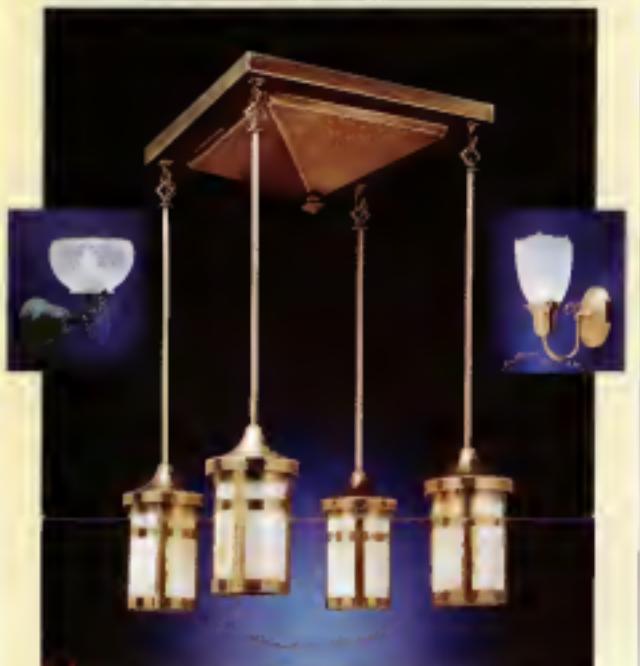
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Shower Update

Installing a low-flow head and an antiscalid device

BY WILLIAM MARSAND PHOTOGRAPHS BY DOUGLAS ROSA

W

ith federal water-conservation laws limiting new showerheads to a flow of 2.5 gallons per minute, plumbing expert Richard Trethewey suggests installing a low-flow head as a weekend project. "It sounds like a job you can knock off during commercials on a sports telecast, but there's more to it than scrapping the old one off and screwing the new one on," Richard says. "If you're not careful, you'll have more than a weekend project on your hands."

"And," he adds, "you can update your shower by replacing the old fixture—the local web separates hot and cold water—with an antiscalid or temperature-controlled valve. Most homeowners don't realize it can be done without ripping out all the tile."

If Richard had his way, "there'd be an antiscalid valve in every shower in the country." The reason is tidy. Playing a role, using the cork or stirring the disk, winter can draw cold water from the shower. Without an antiscalid valve, you'll get a blast of hot water—up to 140 degrees Fahrenheit, which can cause third-degree burns in a matter of seconds.

Antiscalid valves are made for both tub and stall showers, and they're simple to use. Set the desired temperature on the valve, wait a few for the mechanism to bleed the hot and cold flows, then step in and lather up.

choosing a showerhead

A good guide to how far apart to space the showerheads is the Pressure Index, which rates 10 showerheads. Among the showerheads, Richard says, Water Pik's SM-10-P (1620) and SM-10-W (2018) received the most favorable rating, at 951 and 945. Rejuvenation's Conservatory (831) and Polaris' P850 (both with 873) also beat the SM-10 head. Among antiscalid or "pressure" models, Trethewey's SM-10 (2018) was first, followed by Polaris' P850 (244) and Interbath's M1000AW (2018), which checks Consumer Electronics' low-water-pressure laws below the legal 2.5-gallon line, despite being year-round hot water. (Richard's a boor with a maximum flow restrictor rating.) Yet, the risk of scaling increases if a low-flow head is installed, so a temperature-controlled valve is next. That's because the low-flow shower heads build up behind the head and take longer to get through.



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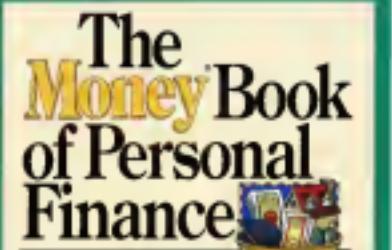
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by Richard Eisenberg

• 100 •

Japanese Saws

For fine joinery, their sharper, thinner blades outperform Western-style saws.

第2章 项目管理：需求管理与项目计划 200



Real Chinese were drawn to Buddhist when, on route to Japan to study especially, he met Li Shizeng, a monk and an accomplished Buddhist teacher. Afterward, says Shizeng, in body and mind consummated in one point, Shizeng helped him achieve that single-point focus. Very few possess such an all-in life goal.



p
Buddhist stories

Paul Discoe isn't meditating. He's sawing. But one look at this bearish Buddhist priest and master woodworker at his intensity, at his alignment of eye, body and mind with the Japanese *eyebrow saw* and length of Paul Oxford leather that yields to the double-edged blade as hand yields to a blade—simpler lead no another conclusion.

His underlying conception is made that much easier by the ryote. Like other Japanese arts and in contrast to the Western variety, it runs on the pull rather than the push stroke. That means the blade is under tension rather than compression, enabling the use of thinner blades for easier, subtler cuts.



"You have to be really focused on that line you're cutting, like a laser beam," says Dusse, owner of Joinery Structures in Oakland, California. "The miter has to be right down the line of the cut. You can't be thinking about food, your sex life or something else and still saw a straight line."

Why do Japanese saws enjoy such a loyal following in the West, particularly given the convenience of power tools? The tight geographical connection between the civilization and its hardware is one big reason, says van Asdai. The son of a fifth-generation Kentucky blacksmith and owner of another Japanese power business in Oakland called The Full of the Sun, van Asdai says, "The more you use it, the more durable those that between you and your



LEFT: The *tsuji-za* (girl) is designed for cutting mortises, grooves in end grain and rabbeting dovetails. Like the one pictured above, it is especially useful when the cutout must measure in a tight area without damaging adjacent wood.

work. What makes traditional Japanese-style woodworking special is the relationship between the tools you use and the kind of work they allow you to do."

Such work often calls for unique joinery, whether the project is a shop screen, a garden pavilion or a modern day palace of Japanese design. The great variety of Japanese saws means the resourceful woodworker can use just the right blade for a specific type of cut.

"These tools are so responsive, so perfectly balanced, your personal skill is all that separates you from the wood you work," says van Asdai. "Japanese tools put the focus back on the magic that exists between the craftsman and his craft."

How to Cut a Tenon

A two-handed, whole-body approach to perfect joinery



Dusse's method
He cuts using a Japanese saw because it is adjustable or miterable and has better sharpness to a very fine edge. The secret of his success is that the small teeth near the front, then shift to the larger middle teeth, cutting longer, thinner and at a steeper angle.



Directing the wood
He holds the piece the grain the 10-inch Japanese saw to begin the cut vertical at a 90- to 45-degree angle. He starts with the small teeth near the front, then shifts to the larger middle teeth, cutting longer, thinner and at a steeper angle.



The right position
The right position is to hold the Japanese-style saw handle in the left hand, versus the 24 inches of many Western saws. —Dusse. Dusse holds the miter box with his body weight for more leverage. As a result, his arms do little work.



For the first shoulder cut
Dusse is at a 45-degree angle to the miter. Again he starts with the small teeth near the front but body weight over the cut this time weight the left arm.



He finishes with
the saw level. Then the other person picks up the miter box. Dusse will use the small teeth near the front but body weight over the cut this time weight the left arm.



THE SAWS

Because a pull stroke puts less strain on the blade, Japanese saws can be made with a harder, though more brittle,



TOP: This *tsuji-za* (girl) has 19 coarseness teeth per inch on one edge, 11 fine teeth per inch on the other. The teeth increase in size from the heel (near the handle) to the toe of the blade, while all crosscut teeth are identical.



TOP: With a blade thickness of only 0.010 inch, the *tsuji-kiri* is designed for fine cutting of angles and the shoulders of tenons and dovetails. The rabbet requires handle enhances grip.

ABOVE: The *tsuji-kiri* in a miterbox cuts a 45-degree angle with a fine-toothed plastic handle and a replaceable blade, which eliminates the need for sharpening.

STYLING: BY DARRIN HANAFORD

the difference... Western and Eastern

Discoo uses Western saws for crude cuts, preserving his Japanese saws for finer, more sophisticated tasks. Either way, his Japanese training leads him to use his whole body, rather than clamps, to hold work steady. He leaves fast bees to keep wood free of debris.



The push stroke of the Western saw uses one strength and control in one movement plus a lot of stress itself. Here, Glensner's body weight is in the tail of the line of cut.



The pull stroke of the Japanese saw takes full advantage of the user's body weight, weight is intense and aligned with the cut. Custom grips with two hands for more power and greater control.

THE QUALITY OF THE FINISH CUT AND EDGES



The Western saw renders a rough and cut, in this case and because the cut is from one side of the wood straight through to the opposite side.



The Japanese saw blade is serrated. In the final cut, reverse the wood to rotate during the cut so each pass cut results in a grade for honing the cut as the wood rotates. Doing so along the teeth of a Japanese saw, however, would be much easier.

(See Glensner, page 108, for details and sources)

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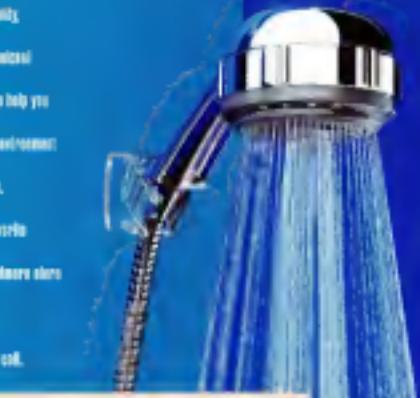
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A small image of the book cover for 'The Power of Habit' by Charles Duhigg. The cover features a man in a suit standing at a podium, with a purple and yellow background.

Workbenches

The one tool no workshop can do without

BITUMEN TALLIES

PHOTOGRAPHS BY DAWN D'AMBROSIO



a sick day busily carving his initials into the mahogany headboard of his parents' bed. A woodworker was born. Norm's first workbench, so

to speak, was one of those toy woodworking sets that children pound on like crazy, trying to force chunky round

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Norm's Bench at Work



THE BENCH DOGS

ABOVE: Bench dogs are removable clamps that, paired with vises, secure projects to the bench surface. Which type of dog works best is debated endlessly among woodworkers. Norm doesn't.

break like aviation wire, but they may let the edges of stock out and are more expensive. Round dogs prevent clamping from any angle, but square ones offer better holding power. And so on.



THE BENCH TOP

LEFT: A well-made bench is a beautiful piece of furniture. Some woodworkers spend more time sanding and filling the bench top than working on it. A live edge like this is a nice look, but Norm uses a sheet of particleboard sheathing, such as Masonite, to protect the top during messy work, like gluing up projects.



THE TAIL VISE

RIGHT: Norm simply puts a vise on the workbench while you work it. Without them, the workbench is little more than a glorified table. Boxes of clamps are typically wedged between bench dogs located in the tail vise, which opens off the end of the bench, and the bench top.



THE WORKSTATION

ABOVE: The workstation is a tool, but it's also a workstation for the router, like a tail vise, or, in this case, an orbital sander. Norm uses a variation of author Mark Duginski's shop that keeps areas safe from stepping on a router and tidy, so to speak, the project that's being worked.



THE FACE VISE

RIGHT: Another debate among woodworkers is over what type of vise to use on the face of the bench. Wood jaws, when born on the face, give you the side of the board, won't let you move on the project being sanded. Metal corner mechanisms are traditional, but metal is expensive. Because it won't fatigue, Norm says.

Sturdy, stable, heavy and large

To withstand all the prying, prodding, pushing and pulling that's done on it, a workbench must be strong. The base should be broad, with vise or levers to keep the bench from rocking. The power tools and vises are best—should be tight. Most important, the top should be made of a dense grained wood, such as maple, beech or birch, to add weight (Norm's bench is a hefty 300 pounds) and keep the bench from shaking and bouncing while you're gluing a board or cutting dovetails. A dense wood is

more dimensionally stable than a soft one; the top won't shift around to match with changes in humidity. And a good, thick top can be planed if it's warped.

Whether you plan to buy a bench or build your own, try one out for size first. The bench should suit your working habits and maximize your efficiency. It should be tall enough to prevent backaches and have enough clearance for overhead storage. Select the largest workbench your space can hold. Like a desk or the kitchen table, benches have a way of filling up with stuff quickly.

Four Good Benches

Someday you'll find the time to design and build your own perfect bench. We know that. Until then, here are a few ready-built models and plans to choose from. Incidentally, Norm's German Ulma is no longer made. But Ulma has a similar model, a cabinetmaker's bench, available through several catalogs. Suggested retail is \$1,395.



VERITAS
\$1795 suggested retail, 29x10' pieces, \$400.00 tools/knives/kit;
\$2075 with bench kit (includes legs)
This Canadian-built cabinet has little or no tools or fully assembled. It is good enough for woodworkers who make a living off their bench. It features a maple top, a twin-drawer base and a sturdy storage case. Total weight, 300 pounds.



BUILD-IT-YOURSELF WORKBENCH

\$40 plane, \$100 apprenticeship seat for parts
building your own bench is a good first project for building woodworkers. This one incorporates several different types of joinery, including dovetails and mortises. You can add tools and other accessories as you need them.



SJOERDS

\$120 suggested retail
Weighing in at 125 pounds, the Sjorbs tool-free support bench isn't as sturdy as the previous-draft models, but it's fine for the amateur woodworker. It comes with two vise, plastic legs and plenty of storage space in the base.

BLACK AND DECKER WORKMATE 200

\$165 suggested retail
Built for side work, the top of the portable Workmate system is home to a vice or vise to create a work surface. The adjustable steel frame includes a benchtop that you can tilt to give the bench stability and weight.

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